
July 10, 2002

U.S. Department of Transportation Executive Summary

The Department of Transportation is assisting USAID helping the Central American countries recover from the devastating hurricane that struck them in October and November of 1998. As the Department's efforts transitioned from response to recovery, DOT, in cooperation with an inter-organizational team of transportation representatives from the United States and transportation partners in Central America, proposed a three-stage program to assist recovery and reconstruction in the region. The programs three related components are as follows:

Activity 1 - provide an aids to navigation system for severely damaged harbor operations. **This project is completed (3/02)**

Background

For several years, DOT's Volpe National Transportation Systems Center (VNTSC) in Cambridge, MA has been involved in the development and application of differential Global Positioning System (DGPS) technology for various maritime venues. The accuracy of the technology is ideal for vessel tracking and navigation in harbors and waterways. A DGPS system was recently installed in Panama, with the assistance of the Panama Canal Commission (PCC) and the U.S. Coast Guard. A consortium of maritime authorities in Central American countries requested assistance from the Volpe Center following the terrible damage to their marine facilities by Hurricane Mitch. After an initial assessment of the situation, it was determined that DGPS-based systems would not only be effective in restoring navigation in ports, but would also upgrade the pre-hurricane navigation capabilities in the Ports of Cortez and San Lorenzo in Honduras and ports in Nicaragua.

Current Status (as of 03/31/02)

The project is now complete. All project goals have been successful achieved. All three DGPS transmitters are fully operational and providing differential correction broadcasts to the four designated ports. Pilot navigation units have been transferred to port authority officials and pilots have been trained in there use. A final project report is nearly complete and will be submitted to RSPA and USAID shortly. During the second quarter of FY 2002, three trips to Tela, Honduras and one trip to Corinto, Nicaragua were made by the Volpe Team in order to complete final installation and testing of the DGPS transmitter stations. During these trips all remaining project tasks were completed.

Project Highlights

- The Volpe Center team traveled to Honduras in December 1999 to survey candidate sites and establish plans for the installation of the DGPS transmitters.
- A topographical survey was performed at the DGPS site in San Lorenzo, Honduras in January, 2000.

- Designs for the concrete tower bases, anchors, and antenna tuner were drafted and finalized during the 1st week in February.
- ENP (Empresa Nacional Portuaria) held a meeting during the 2nd week of February to discuss land rights issues at Puerto Cortes. If a consensus on the site cannot be reached between the Honduran Government and claimants to the land, an alternate site will be selected.
- The hardware necessary for the installation of the ground-planes and footings for both sites arrived in Honduras in February.
- Antenna kits and tower equipment arrived in Honduras by February 21, 2000.
- Development and testing of portable navigation units and software applications is on schedule.
- Preparation of the 2nd transmitter shelter is being finalized at the Volpe Center.
- A third transmitter shelter arrived at Volpe for outfitting during the beginning of March.
- Volpe Center Advance Team traveled to Nicaragua in March to evaluate candidate sites and meet with officials.
- The Nicaragua trip included visits to San Lorenzo and Puerto Cortes in Honduras to review site drawings and to examine an alternate site at Cortes.
- Volpe Engineers were present at the sites in Honduras during the installation of ground planes, footings, and antenna towers in May and June.
- Land acquisition negotiations continue to delay initiation of site construction in Puerto Cortes. A second alternate site at Tela is now being considered for the installation.
- A major project milestone was achieved on August 15, 2000, when the construction of the inaugural DGPS transmitter site at the Port of San Lorenzo, Honduras, was completed. The transmitter is undergoing final system tests and is scheduled for full operational capability by the end of October.
- Deployment of portable navigation display units, and user training was performed in October.
- A DGPS transmitter monitoring station was installed at Corinto, Nicaragua.
- A shipment of tower sections, antenna kit, and groundplane components was delivered to Corinto in Nicaragua for the construction of the transmitter site there.
- The San Lorenzo Transmitter site was completed in October, 2000.
- The Volpe team visited Corinto on December 1st to review engineering drawings. The land for the site was purchased by EPN and construction of a perimeter fence is underway.
- An official inauguration ceremony was held at San Lorenzo on Dec. 5, 2000. Among the attendees were Ray Lynch and Bob Meehan, USAID, and the Ministers of Transportation and Commerce from Honduras.
- The land in Tela, Honduras, has finally been purchased by ENP and construction of the site should commence by February once the bidding processes are completed. Civil engineering work at Corinto, Nicaragua also should commence around this time.
- Resolution of the land ownership issue in Tela apparently has not been finalized as of March 31. However, ENP has issued a request for bids on the construction of the site and has received 20 responses. ENP officials have reaffirmed that they are fully

committed to the completion of the project and feel confident that construction of the site will commence shortly.

- The Volpe team visited the Corinto site in March to inspect the construction of forms for the concrete bases. A return trip will follow in April to oversee the remaining civil engineering work at the site.
- Pilot Navigation Units for Corinto and Sandino are being assembled and customized to include local electronic navigation charts.
- The return trip by the Volpe team to Corinto in April has been postponed due to weather related construction delays.
- The Assemblage of PNUs was completed in June 2001.
- Enhancements continue to be made to the Chart Navigation Display software.
- As of July 1, 2001, the land at Tela is owned by ENP and site construction contractors have been selected. Final details regarding access to the site through private land is being negotiated.
- Remaining activities include the completion of the sites at Corinto and Tela, pilot training and chart validation.
- As mentioned during the OMB review, continuing delays and the repeated relocation of the DGPS site for Puerto Cortes have resulted in a budget shortfall. All contingency plans established to manage the financial risk of site construction delays have been exhausted. Project engineers continue to be temporarily reassigned to other projects. To minimize travel costs, all trips to Central America are scheduled to combine visits to both unfinished sites in order to complete as many remaining tasks as possible.
- Weather delays continued to hamper much of the site development at Corinto during the summer months until September 2001. However, as of 9/30, most of the construction is complete. Only the groundplane and transmitter cable installation remain. The electronics shelter is on site with power connection and air conditioning.
- The 8 Pilot Navigation Units built for Nicaragua were shipped in September.
- Construction of the site at Tela, Honduras began in August and is progressing rapidly.
- Due to prior commitments to other projects and because of travel restrictions to Nicaragua during national elections at the beginning of November, the Volpe team trip to complete the installation at Corinto has been rescheduled for the end of November or the beginning of December.
- The Volpe team traveled to Corinto in December to inspect the readiness of the transmitter site, install reference station equipment and antennae, and to participate in an official dedication ceremony of the navigation system project.
- The Volpe project team will return to Corinto to complete site installation, transmitter tuning, and to train pilots and maintenance personnel during the next quarter.
- Construction of the final transmitter site at Tela, Honduras for the port of Cortes, began in August 2001, and continues to progress.
- The balance of the initial project funding will cover the completion of the tasks necessary to make the Corinto transmitter site fully operational and to ensure the sustainability of the system.
- Additional project funding of \$90K is currently undergoing final authorization and is expected soon. This funding will be used to complete the final transmitter site at Tela, Honduras.

- Additional project funding of \$90K was received.
- The Volpe Project team traveled to Honduras in January, 2002 to continue construction of the DGPS transmitter site at Tela.
- In March, two trips to Central America were taken to complete all remaining project tasks including making fully operational the radio beacon sites at Corinto and Tela and conducting maintenance and Pilot training.

Completion date: 03/31/2002 **This project is completed.**

Activity 2 - establish a framework to reconstruct Central American port infrastructures and operations. *This project is completed (12/01).*

The Phase III - Port Damage Assessment Training and Technology Transfer was completed by the Maritime Administration (MARAD) on December 14, 2001. The report has well received by the Ministers of Transportation of both Honduras and Nicaragua. There were 40 students trained on Geographic Information System Mapping Technology. The training consisted of three days training by two Geo-Spatial experts from the U.S. Department of Transportation, Bureau of Transportation and the U.S. Department of Interior, Bureau of Indian Affairs. Nine governmental and three universities were involved in the training. The organizations voluntarily established memorandums of agreements to develop a national database to respond to future disasters and to use the GIS equipment provided by MARAD and the U.S. Geological Survey. The training took place December 3-14, 2001.

Five GIS workstations and equipment were given to both the Honduran and Nicaraguan organizations. The GIS equipment and workstations now reside with the principal disaster response, transportation organizations and research groups for both countries. The geo-spatial data and pictorials accumulated from the Phase I and II Port Damage Assessment Reports were integrated in to the GIS applications developed for both countries. They included transportation infrastructure and maritime trade data GIS applications. The geo-spatial data, pictorials, GIS workstations, and equipment provide both countries with nation-wide capability to respond to disasters in the future.

The Central American Commission for Maritime Transport also participated in the GIS training and received GIS software to establish a Central American GIS system for disaster preparedness and response. They are currently working with OAS in reducing natural hazards to trade corridors in the Central American Region.

Completion Date: 12/31/01 **This project is completed.**

Activity 3 - develop a pilot disaster response and reduction mechanism and plans to strengthen international disaster transportation efforts and lessen the vulnerability of trade corridors to natural disasters.

Background:

This activity builds on OAS vulnerability reduction to natural disasters work in Central

America and includes identifying existing and proposed mechanisms for international response in the case of damage to transportation infrastructure, profiling the most vulnerable segments of existing and complementary road corridors, and preparing technical personnel to contribute now and in the future to vulnerability reduction through development activities.

Current Status -

USDE/OAS has completed the following activities:

- Identification of technology transfer needs for strengthening transportation assets.
- Coordination of the creation and presentation of an international training course on the use of natural hazard information in the preparation of road investment projects.
- Coordination at the profile and/or pre-feasibility level of preparation of road sector investment projects to lessen vulnerability.
- Description of a framework for multi-national disaster preparedness and a concept of a multi-country mutual assistance system.
- Preparation of an annotated program for a hemispheric conference on trade corridor vulnerability reduction that took place in March, 2001 in Argentina.
- Roundtable discussions on public/private partnerships in each Central American country in order to promote vulnerability reduction and transportation disaster response activities.
- OAS-USDOT-CRRH meeting on corridors, water and vulnerability reduction to natural hazards, that took place in San José, Costa Rica, February, 2002.
- OAS/USDE continues to support efforts by Central America regional institutions to continue to discuss and act on recommendations identified in the OAS-USDOT activities.

Complementary work that has been carried out during the year 2002 includes the following activities:

1. Updating of an overview of the vulnerability of the road corridor in Central America in the context of the region's trade corridor (OAS to assist member countries individually and through regional organizations as resources permit.)
2. Organization and presentation with the collaboration of the University of Texas at Austin, Lyndon B. Johnson School of Public Affairs (LBJSPA), a PROCORREDOR collaborating center, to host the North America Workshop on Transportation Corridor Vulnerability Reduction to Socio-Natural Disasters, September 19-20, 2002. Representatives of operational and research branches of transportation institution, the engineering and science communities dealing with natural hazards, and international boundary and development assistance agencies are planning on attending.
3. The OAS/USDE, in collaboration with the University of South Florida, presented the Second Hemispheric Conference on Vulnerability Reduction of Trade Corridors to Socio-Natural Disasters (TCC II) on June 12-14, 2002. The theme of transportation sector vulnerability was included in the discussions. A third hemispheric conference, TCC III, is scheduled for June, 2003, in Honduras with the collaboration of Zamorano.

In January 2001, the OAS/USDE completed the manual from the training course on the use of natural hazard information in the evaluation of road investment projects. New experiences of the course presentation were included into the course manual. 200 copies in Spanish of the outline of the training activities, training activity evaluations and list of participants who successfully completed the corresponding training activities were delivered to USDOT.

OAS/USDE completed the working document, “Mechanisms for Mutual Assistance in Case of Damage and Vulnerability Reduction of Transportation Infrastructure in Central America”, and delivered it to the USDOT on February 28, 2001. Two hundred copies in Spanish and 100 copies of an Executive Summary in English have been reproduced for distribution, which is underway. Additional copies in Spanish and English have been printed and are being distributed to those who request copies.

OAS/USDE completed the working document, “General Study on the Vulnerability of Road Segments to Natural Hazards of the Pan American Highway and its Complementary Corridors in Central America”. The document was delivered to the USDOT on March 8, 2001. Two hundred copies of the study in Spanish and 200 copies of the Executive Summary in English were reproduced for distribution in 2001. Additional copies in Spanish and English have been printed and are being distributed as requested.

The OAS continues to refer requests for detailed national studies to the national technical teams while it presents the general study at appropriate regional and hemispheric meetings. Informal comments of national technical teams indicate that the information generated in the national vulnerability profiles is being used to shape future road transportation projects as well as generating additional requests to appropriate national institutions for additional natural hazard studies. The OAS is emphasizing to the national technical teams the increasing availability of natural hazard information through the collaborative programs of USGS with individual Central American countries.

The annotated program for the Hemispheric Conference on Vulnerability Reduction of Trade Corridors to Socio-Natural Disasters (TCC) has also been submitted, which was used for the presentation of the TCC. TCC II, to be held in June, 2002 in Tampa, Florida in collaboration with the University of South Florida, will include a revisiting of transportation vulnerability issues.

An overview of the Central American transportation corridors as part of the region’s trade corridors was delivered to the USDOT on April 30, 2001. This study will form part of the basic documentation that will be used at the upcoming regional meeting on corridors, vulnerability and management of water resources.

Completion Date: changed from 3/31/02 to 9/30/02

Hurricane Reconstruction Program Quarterly Report
3rdQuarter 2002 Report - July 10, 2002
U.S. Department of Transportation
Total Funding: \$2,079,450

<u>Program Objective</u>	<u>Accomplishments to Date</u>	<u>Budget: obligated/outlays</u>
<p><u>Activity 1</u> - To provide an aids to navigation system for severely damaged harbor operations. (Volpe National Transportation Systems Center)</p>	<p><u>Q2-FY2000</u> The Volpe Center team traveled to Honduras in December 1999 to survey candidate sites and establish plans for the installation of the DGPS transmitters. A topographical survey was performed at the DGPS site in San Lorenzo, Honduras in January. Designs for the concrete tower bases, anchors, and antenna tuner were drafted and finalized during the 1st week in February. ENP (Empresa Nacional Portuaria) held a meeting during the 2nd week of February to discuss land rights issues at Puerto Cortes. If a consensus on the site cannot be reached between the Honduran Government and claimants to the land, an alternate site will be selected. The hardware necessary for the installation of the ground-planes and footings for both sites arrived in Honduras in February. Antenna kits and tower equipment arrived in Honduras by February 21, 2000. Development and testing of portable navigation units and software applications is on schedule. Preparation of the 2nd transmitter shelter is being finalized at the Volpe Center. A third transmitter shelter arrived at Volpe for outfitting during the beginning of March. The Volpe Center Advance Team traveled to Nicaragua in March to evaluate candidate sites and meet with officials. The Nicaragua trip included visits to San Lorenzo and Puerto Cortes in Honduras to review site drawings and to examine an alternate site at Cortes.</p> <p><u>Q3-FY2000</u> Volpe Engineers were present at the sites in Honduras during the installation of ground-planes, footings, and antenna towers in May and June. Land acquisition negotiations continue to delay initiation of site construction in Puerto Cortes. A second alternate site at Tela is now being considered for the installation.</p> <p><u>Q4-FY2000</u> A major project milestone was achieved on August 15, 2000, when the construction of the inaugural DGPS transmitter site at the Port of San Lorenzo, Honduras, was completed. The transmitter is undergoing final system tests and is scheduled for full operational capability by the end of October. Deployment of portable navigation display units, and user training, is also scheduled for October. A DGPS transmitter monitoring station was installed at Corinto,</p>	<p>Activity 1: \$1,472,000 + \$90,000 additional, for a total of \$1,562,000 - obligated</p> <p>Expended to date: \$1,562,000 Completed: 3/02</p>

Nicaragua during the August trip. A shipment of tower sections, antenna kit, and ground-plane components was delivered to Corinto in Nicaragua for the construction of the transmitter site there.

Q1-FY2001

In October, the team completed final testing of the inaugural DGPS transmitter system at the Port of San Lorenzo, Honduras. Portable navigation display units were deployed and initial training was provided to the pilots. Transmitter signal quality was monitored and used by the portable navigation units to verify buoy locations and define navigational channel lines for the electronic charts. The follow-up trip from November 28th to December 5th included a visit to the port of Corinto in Nicaragua to meet with officials of the Empresa Portuaria Nacional (EPN) to review engineering drawings. At the time of the visit, EPN was in the process of installing a perimeter fence around the 26-acre parcel of land purchased for the project. Following the trip to Corinto, the team returned to San Lorenzo for additional Pilot training and to attend the official system inauguration ceremony. Also accomplished during this reporting period was the completion and shipment of the final DGPS transmitter shelter to Corinto. The land purchase at Tela, Honduras, is complete and construction of the site will proceed following a contract bidding process and the termination of the rainy season.

Q2-FY2001

Pilot Navigation Units continue to be assembled and customized with regional electronic chart files by the Volpe Center for San Lorenzo and the Nicaraguan ports of Corinto and Sandino. Construction of a site for a second DGPS transmitter station to service the ports of Corinto and Sandino on the Pacific Coast of Nicaragua is well underway and should achieve initial operation capability by June 2001. The Volpe project team traveled to Corinto in March to oversee site development and the pouring of concrete for the antenna tower and container bases. A follow-up trip is scheduled for the end of April to direct the installation of a ground plane and the antenna towers. A final system will be deployed in Tela, Honduras for the port of Cortes.

Q3-FY2001

Substantial progress on the construction of the DGPS site at Corinto was made. The rainy weather has caused the suspension soil backfill operations which are necessary to complete construction of the concrete footings. Construction should resume in July. The Assemblage and testing of all remaining Pilot Navigation Units was completed in June. The units now

await delivery to Central America. Enhancements to the Chart Navigation Display software continued during this quarter along with the implementation of regional electronic chart files. As of July 1, 2001, the land at Tela is owned by the ENP and site construction contractors have been selected. Final details regarding access to the site through private land is currently being negotiated. Remaining activities include the completion of the sites at Corinto and Tela, pilot training and chart validation. As mentioned during the June OMB review, continuing delays and the repeated relocation of the DGPS site for Puerto Cortes have resulted in a budget shortfall. All contingency plans established to manage the financial risk of site construction delays have been exhausted. Project engineers continue to be temporarily reassigned to other projects. In order to minimize travel costs, all trips to Central America are scheduled to combine visits to both unfinished sites in order to complete as many remaining tasks as possible. As of July 1, 2001, the remaining project balance is \$49,092.

Q4-FY2001

Despite being hampered by weather conditions, construction of the DGPS site at Corinto continued during the quarter. Nearly all tasks are now complete, including the installation of the transmission towers and concrete bases. The electronics shelter was moved to the site and power connection, air conditioning and lighting have been established. Remaining tasks that are the responsibility of the Port Authority include completion of the ground plane and transmitter cable installation. Once all contractor work is finished, the Volpe project team will return to Corinto to complete the site development. Construction of the final transmitter site at Tela, Honduras for the port of Cortes, began in August 2001, and has progressed rapidly. The 8 Pilot Navigation Units assembled and tested for Nicaragua ports were shipped in September. Enhancements to the Chart Navigation Display software continued during this quarter along with the implementation of regional electronic chart files. Remaining activities include the completion of the sites at Corinto and Tela, pilot and maintenance training and chart validation. As mentioned during the June OMB review, continuing delays and the repeated relocation of the DGPS site for Puerto Cortes have resulted in a budget shortfall. All contingency plans established to manage the financial risk of site construction delays have been exhausted. As of September 30, 2001, the remaining project balance is \$29,435.

Q1-FY2002

During this quarter, the construction phase of the DGPS transmitter station at Corinto, Nicaragua was completed. The Volpe team traveled to Corinto in December to inspect the readiness of the transmitter site, install reference station equipment and antennae, and to

	<p>participate in an official dedication ceremony of the navigation system project. The Volpe project team will return to Corinto to complete site installation, transmitter tuning, and to train pilots and maintenance personnel during the next quarter. Construction of the final transmitter site at Tela, Honduras for the port of Cortes began in August 2001, and continues to progress. The remaining funds of \$21,000 will be used to make operational the navigation systems in Nicaraguan ports. Additional funding (\$90K) is undergoing final approval and will be used for the completion of the Tela, Honduras site and the training of pilots in Puerto Cortes.</p> <p><u>Q2-FY2002</u></p> <p>All project tasks have been completed successfully. During this quarter we received the additional \$90K funding necessary to successfully complete the project. The project incurred schedule and budgetary delays due to repeated relocation of the DGPS site for Puerto Cortes. With this funding, all project goals were successfully completed before the March 31, 2002 deadline. A complete description of project tasks and results will be included in the final report.</p> <p>San Lorenzo pilots continue to utilize the Pilot Navigation Units and DGPS broadcast to conduct all-hour, all-weather transits at the port. The technology has enabled the pilots to navigate the sixteen-mile long, narrow and twisting approach to and from the port with a high degree of confidence and an unprecedented level of safety. Approaches to San Lorenzo previously were attempted only during daylight hours and at high tide. The DGPS system will keep the port open for 24-hour operations in all-weather conditions with a very high degree of safety and efficiency.</p> <p>Project completion date of 3/31/02 was met. This project is completed.</p>	
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<p><u>Activity 2</u> - To establish a framework to reconstruct Central American port infrastructures and operations. (Maritime Administration)</p>	<p>The Phase III - Training and Technology Transfer been completed. The Port Damage Assessment Team completed all three Phases of work. The training and technology transfer of Geographic Information System (GIS) for disaster preparedness and response involved three days of training in Honduras and Nicaragua from December 3-14, 2001. The MARAD lead team involved the team leader from Maritime Administration and two GIS instructors from the Bureau of Transportation Statistics of USDOT and the Bureau of Indian Affairs of the U.S. Department of Interior. The team provided instruction 40 students; 19 students in Honduras and 21 in Nicaragua. The students represented professionals from national governments highway and bridge agencies, national port authorities, emergency responders, and academic institutions in both countries. Five GIS workstations and equipment were contributed from USAID funds. Both countries now have the capability to build a national database to respond to natural disasters and reconstruction efforts in the future using GIS mapping equipment. The Team provided U.S. Geological Survey baseline maps developed for Central America and transportation infrastructure spatial data taken from the Phase I and Phase II reports. With MARAD's advice and guidance, both countries established a memorandum of understanding between the transportation, emergency response, and academic institutions to implement a national disaster response program. The U.S. Ambassador in Honduras held a national press conference with the media in Honduras at the graduation ceremony. Also, both ministers of transportation from Honduras and Nicaragua received a plaque for providing cooperation in support of the Port Damage Assessment Team. The plaque was presented on behalf of the MARAD, Pan American Institute of Highways, and the Bureau of Transportation Statistics. In addition, a regional organization representing Central America known as Central American Maritime Commission (COCATRAM) also received training and GIS software. COCATRAM is interested in using the GIS system to include all of Central America countries to reducing natural hazard vulnerabilities to earthquakes, hurricanes, etc.</p> <p>Project completion date of 12/31/01 was met. This project is completed.</p>	<p>Activity 2: \$220,000 - obligated</p> <p>Expended to date: \$220,000 Completed: 12/01</p>
<p><u>Activity 3</u> - To develop a pilot transportation disaster response plan to strengthen international disaster transportation efforts and lessen the</p>	<p>The OAS/USDE has completed the principal components of the activities in regards to the vulnerability reduction to natural disasters work in Central America.</p> <p>In January 2001, the OAS/USDE completed the manual from the training course on use of natural hazard information in the evaluation of road investment projects. New experiences of the course presentation into the course manual were included. Requested copies in Spanish of the outline of the training activities, training activity evaluations and list of participants</p>	<p>Activity 3: \$297,450 - obligated</p> <p>Expended to date: \$297,450</p>

<p>vulnerability of trade corridors to natural disasters. (Organization of American States)</p>	<p>whom successfully completed the corresponding training activities were delivered to USDOT and to interested institutions in the region.</p> <p>USDE/OAS completed the working document, “Mechanisms for Mutual Assistance in Case of Damage and Vulnerability Reduction of Transportation Infrastructure in Central America,” and it was delivered to U.S. DOT on February 28, 2001. Two hundred copies in Spanish and 100 copies of an executive summary in English have been reproduced for distribution. Additional copies (200) in Spanish have been printed and distributed as requested.</p> <p>USDE/OAS in coordination with OAS offices in Central America and national, regional and international institutions in charge of the public /private transportation sector and its vulnerability reduction to natural hazards, organized roundtable meetings to follow up on the implementation of the actions suggested in the working document “Mechanisms for Mutual Assistance in Case of Damage and Vulnerability Reduction of Transportation Infrastructure in Central America,” prepared by the OAS/USDE-USDOT Central America Transportation Vulnerability Reduction Project. The USDE has finished the final report of the roundtable meetings. Copies of the report in Spanish and an English summary have been distributed.</p> <p>OAS/USDE completed the working document “General Study on the Vulnerability of Road Segments to Natural Hazards of the Pan American Highway and its Complementary Corridors in Central America.” The document was delivered to USDOT on March 8, 2001. Two hundred copies of the study in Spanish and 200 copies of an executive summary in English have been reproduced and distributed. OAS/USDE is promoting a follow up process to the “General Study on the Vulnerability of Road Segments to Natural Hazards of the Pan American Highway and its Complementary Corridors in Central America” since there has been more natural disasters on the region affecting the Pan American Highway, among other economic infrastructure, and major regional transportation studies and manuals have been produced, whose content needs to be compatible with natural hazard vulnerability information.</p> <p>An overview of the Central American transportation corridors as part of the region’s trade corridors was delivered to the DOT on April 30, 2001.</p> <p>OAS/USDE-CRRH with the support of USDOT organized and carried out a meeting on corridors, water and vulnerability reduction to natural hazards. This meeting was held in San</p>	
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	<p>José, Costa Rica, February, 2002, utilizing documentation developed during the OAS/USDE-USDOT activities.</p> <p>To support disaster reduction of the transportation sector on a regional basis, OAS/USDE is presenting in collaboration with the University of Texas at Austin, Lyndon B. Johnson School of Public Affairs (LBJSPA), a PROCORREDOR collaborating center, the North America Workshop on Transportation Corridor Vulnerability Reduction to Socio-Natural Disasters, scheduled for September 19 & 20. OAS/USDE, with collaboration from the University of South Florida, presented the Second Hemispheric Conference on Vulnerability Reduction of Trade Corridors to Socio-Natural Disasters (TCC II) in Tampa, Florida on June 12-14, 2002. The theme of transportation sector vulnerability reduction in Central America was discussed in reference to competitiveness and reconstruction following Mitch.</p> <p>The OAS/USDE work on vulnerability reduction of the transportation sector, supported by USDOT, has been recognized by the Western Hemisphere Transportation Initiative (WHTI), and the Caribbean countries have used WHTI to express their interest in preparing a working document on mechanisms for mutual assistance in case of damage to infrastructure and vulnerability reduction of the transportation sector to natural hazards. USDOT has submitted this project as part of its package of activities under a general Third Border Initiative to be undertaken by the United States Government.</p> <p>This project is essentially completed, but for the presentation of the North America Workshop in September 2002. Completion date is marked for 9/30/02.</p>	
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Total Obligations: \$2,079,450

Total Outlays: \$2,079,450

Funds Remaining: \$ 0

July 10, 2002

**Central America relief efforts
funds breakdown by country
- requested by USAID**

Activity 1: Aids to Navigation Systems

Activity 1 Budget: \$1,472,000 + 90,000 = \$1,562,000

Honduras	\$ 812,000
Nicaragua	\$ 750,000
Activity 1 - Total	\$1,562,000
Remaining Balance	\$ 0

Activity 2: Framework to reconstruct Central American port infrastructure and operations

Activity 2 Budget: \$220,000

This activity was not set up by individual countries but as one AID account. A rough estimate of the breakdown of the MARAD \$220,000 is as follows:

	\$125,000 in Honduras
	\$ 95,000 for Nicaragua.
Activity 2 – Total	\$220,000
Remaining Balance	\$ 0

Note: The costs in Honduras were higher because MARAD had to rent an airplane, vehicles and drivers to survey over 150 miles of roads and bridges in northern Honduras.

Activity 3: Pilot transportation disaster response plan to strengthen international disaster transportation efforts and lessen the vulnerability of trade corridors to natural disasters

Activity 3 – Total	\$297,450
Remaining Balance	\$ 0

The Central America vulnerability effort is divided between three projects as follows (these amounts include expenses that are common to the six countries, and they are equally allocated among them):

	<u>Project 1</u>	<u>Project 2</u>	<u>Project 3</u>	<u>Total</u>
Costa Rica	\$ 23,571	\$16,384\$ 9,620	\$ 49,575	
El Salvador	\$ 23,571	\$16,384\$ 9,620	\$ 49,575	
Guatemala	\$ 23,572	\$16,383\$ 9,620	\$ 49,575	
Honduras	\$ 23,572	\$16,383\$ 9,620	\$ 49,575	
Nicaragua	\$ 23,572	\$16,383\$ 9,620	\$ 49,575	
Panama	\$ 23,572	\$16,383\$ 9,620	\$ 49,575	
Activity 3 Total	\$141,430	\$98,300\$57,720	\$297,450	